

least one of another filter element and a housing in which the filter element is received, the seal assembly having a first seal in communication with the feed liquid and a second seal in communication with the permeate liquid and a channel therebetween;

monitoring the channel for the presence of liquid.

16. (New) The method according to claim 15 further including:

in response to detecting liquid in the channel, determining whether the liquid is the feed liquid or the permeate liquid.

17. (New) The method according to claim 15 wherein the feed liquid is heat sterilized water.

A copy of the pending claims, including a marked-up copy of claims 1-7 showing the modifications is attached as APPENDIX 1.

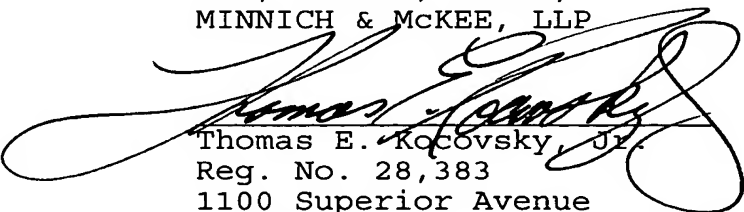
#### REMARKS

This amendment is to eliminate multiple dependent claims and place the application in better form for examination and an early allowance.

An early examination and allowance of all claims is earnestly solicited.

Respectfully submitted,

FAY, SHARPE, FAGAN,  
MINNICH & MCKEE, LLP

  
Thomas E. Kocovsky, Jr.  
Reg. No. 28,383  
1100 Superior Avenue  
Seventh Floor  
Cleveland, OH 44114-2518  
(216) 861-5582

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of:	)	Examiner: Unknown
T. NURMINEN, et al.	)	
	)	Art Unit:
Serial No.: Unknown	)	
	)	
Filed: Herewith	)	
	)	
For: FILTERING UNIT AND	)	
METHOD OF SEALING SAME	)	
	)	
Attorney Docket No.:	)	Cleveland, OH 44114
MED 2 1115	)	January 8, 2002

APPENDIX 1

In the Specification:

Marked-up copies of paragraphs amended in specification:

page 2, lines 24 - page 3, line 2:

--FIGURE 1 shows a filter plate 1 according to the prior art, having a central bore 2. FIGURE 2 shows a section of part of a stack formed from plates 1. [Three] Four plates are shown in the Figure, but the stack may comprise additional plates depending on required filter surface area; the stack is confined in a housing not shown in the Figure. In the housing, a flow of pressurized mixture for filtration is maintained. The plates comprise a porous ceramic support body 3, formed from e.g., aluminum oxide and having a relatively large pore size, e.g.,  $> 1\mu\text{m}$ , and on the surface of the support body has been formed a ceramic filter membrane 4. The membrane has been formed from e.g., titanium or zirconium oxide. The central bores 2 of the plates form a permeate channel 6; in the embodiment shown, a perforated tube 5 is provided therein. The joints between the mating faces of the plates are sealed by means of O-rings 7.--

On page 3, line 19, please cancel the title and substitute the new title:

--Summary of the Invention--.

On page 4, line 29, before the heading "Brief description of the drawings", please insert the paragraph:

Still further advantages of the present invention will become apparent to those of ordinary skill in the art upon reading and understanding the following detailed description of the preferred embodiments.

On page 4, line 30, after the title "Brief description of the drawings", please insert the paragraph:

The invention may take form in various components and arrangements of components, and in various steps and arrangements of steps. The drawings are only for purposes of illustrating a preferred embodiment and are not to be construed as limiting the invention.

On page 5, line 12, please delete the heading "Detailed description" and insert the new heading:

--Detailed Description of the Preferred Embodiments--

At the end of page 7, line 4, please insert the paragraph:

The invention has been described with reference to the preferred embodiment. Obviously, modifications and alterations will occur to others upon reading and understanding the preceding detailed description. It is intended that the invention be construed as including all such modifications and alterations insofar as they come

within the scope of the appended claims or the equivalents thereof.

On page 8, after the heading "Claims", please insert:

Having thus described the preferred embodiment, the invention is now claimed to be:

In the Claims:

Copy of Pending claims - with markings showing amendments made

Please amend claims 1-7 as follows:

1. (Amended) A crossflow [Crossflow] ceramic membrane filtering unit [having within] comprising:  
a housing;  
one or more filtering elements partly coated  
5 with a filtering membrane[, characterized by the];  
joints between the filtering elements and  
between the filtering elements and the housing being  
sealed by means of a gasket or a gasket system  
[comprising] which defines an internal intermediate space.
2. (Amended) The ceramic membrane [Membrane] filtering unit according to claim 1, [characterized by] wherein the intermediate space [being] is connected to the outside of the filtering unit.
3. (Amended) The ceramic membrane [Membrane] filtering unit according to claim 1 [or 2, characterized by having] further including:

5 a sensor for indicating fluid leaking into the intermediate space.

4. (Amended) The ceramic [Ceramic] membrane filtering unit according to [any] claim 1[-3, comprising] wherein the filtering elements include one or more plate-shaped filtering elements having apertures, said elements  
5 being jointed together and to the housing, said apertures thereby forming a tight, unitary conduit for permeate removal and the outer surface of the elements being essentially free to receive material to be filtered, [characterized by] the plate-shaped elements being fitted  
10 to each other and to the housing by means of at least two gaskets, and [the] central zones of the elements being impermeable so as to form spaces delimited by the gaskets and the impermeable surfaces, and said spaces being interconnected by apertures in the elements, said  
15 apertures having impermeable surfaces.

5. (Amended) The ceramic [Ceramic] membrane filtering unit according to [any] claim 1[-3, comprising] wherein the filtering elements include at least one tubular filtering element having at least one channel  
5 internally coated with a filtering membrane.

6. (Amended) A method [Method] for sealing a ceramic crossflow membrane filtering unit comprising one or more filtering elements within a housing, said elements being partly coated with a filtering membrane,  
5 [characterized by] the method comprising:

sealing [the] joints between the elements and between the elements and the housing by a gasket or a gasket system comprising an internal space connected to the outside.

7. (Amended) The [use of a filtering unit according to claim 1 or a] method according to claim 6 [in the] further including:

[filtration, preferably ultrafiltration, of]  
5 filtering water.

Please add new claims 8-17 as follows:

8. (New) The method according to claim 7 further including ultrafiltering water.

9. (New) A crossflow membrane filtering unit comprising:

at least one filter element having a feed surface over which a feed liquid flows and a discharge  
5 surface from which a permeate flow is discharged;

a seal assembly disposed between the filter element and one of another filter element and a housing, the seal assembly including:

an inner seal in fluid communication  
10 with the feed liquid flow,

an outer seal in fluid communication with the permeate flow, and

a channel between the inner and outer seals, the channel in communication with a  
15 leakage discharge channel such that liquid discharge through the discharge channel is indicative of leakage through at least one of the inner and outer seals.

10. (New) The crossflow membrane filtering unit according to claim 9 wherein the at least one filter element includes:

a plurality of filter plates, each plate having  
5 an aperture defined by the discharge surface, an impermeable surface surrounding the aperture, and the feed

surface surrounding the impermeable surface, the plates being stacked with the apertures in alignment and the seal assembly between the impermeable surfaces of adjacent plates.

11. (New) The crossflow membrane filtering unit according to claim 10 wherein the inner and outer seals each include an annular gasket, the inner and outer gaskets being spaced to define the channel.

12. (New) The crossflow membrane filtering unit according to claim 9 wherein the filter element includes:

an interior bore extending between end surfaces, the interior bore being surrounded by the inflow surface; the end surfaces being impermeable, the seal assembly being disposed between at least one end surface and a housing in which the filtering element is received.

13. (New) The crossflow membrane filtering unit according to claim 9 wherein the filter element includes:

an interior bore defined by the inflow surface; a peripheral surface having an impermeable ring at least at one end and the permeate surface defined thereadjacent;

the seal assembly between being disposed between the impermeable ring and a housing in which the filter element is received.

14. (New) The crossflow membrane filtering unit according to claim 9 further including:

a sensor disposed in communication with the channel for sensing a presence of liquid in the channel.

15. (New) A method of ceramic membrane filtering comprising:

5 flowing a feed liquid over a feed surface of a filter element and discharging a permeate liquid from a discharge surface of the filter element, the feed liquid and the permeate liquid being separated from each other by a seal assembly disposed between the filter element and at least one of another filter element and a housing in which the filter element is received, the seal assembly having  
10 a first seal in communication with the feed liquid and a second seal in communication with the permeate liquid and a channel therebetween;

monitoring the channel for the presence of liquid.

16. (New) The method according to claim 15 further including:

5 in response to detecting liquid in the channel, determining whether the liquid is the feed liquid or the permeate liquid.

17. (New) The method according to claim 15 wherein the feed liquid is heat sterilized water.

10030738.04.1502